

CATTLE POINT ROAD RELOCATION

Scoping Document, 2002

TABLE OF CONTENTS

Chapter One: Introduction

Chapter Two: The Scoping Process

Chapter Three: Request for Information

Chapter Four: Alternatives

Chapter Five: Scope of the Environmental Analysis

Chapter Six: Proposed Project Schedule

Chapter Seven: Draft Environmental Impact Statement
Outline

Prepared for

**San Juan County Department of Public Works
915 Spring Street
Friday Harbor, WA 98250**

Prepared by

**HDR Engineering, Inc.
500 - 108th Avenue N. E.
Suite 1200
Bellevue, WA 98004**

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CHAPTER 1: INTRODUCTION

Background

Cattle Point Road extends along the southern shore of San Juan Island through San Juan Island National Historical Park, a unit of the National Park System. It also serves as the only land connection between residents of Cape San Juan and Cattle Point Estates and the remainder of the island. San Juan County maintains a 60-foot right-of-way along Cattle Point Road through the park and is responsible for maintaining the roadway.

The portion of Cattle Point Road that is the subject of concern is a gentle curve that extends for approximately 1,750 feet in a predominantly east-west orientation. It is situated on a slope that is composed predominantly of sand with gravel ([Figure 1 Vicinity Map](#)). This slope rises from the Strait of Juan de Fuca to the edge of the bluff some 50 feet south of the existing roadway. The natural processes of wave action at the toe of the bluff slope, surface drainage and wind action along the face of the slope continue to erode the slope in a northerly direction and in the near term may adversely affect the stability of the existing roadway. Over the long term, it is likely that this slope will continue to progress in a northerly direction and erode the side of Mount Finlayson. The road traverses the slope at an elevation approximately 150 feet above sea level. According to recent limited measurements of the slope erosion, the erosion appears to be at a rate that will pose a safety risk to the public.

Purpose and Need for the Project.

The purpose of the proposed project is to develop and provide a long-term solution for continued access to Cattle Point and the residential areas east of the San Juan Island National Historical Park on San Juan Island while protecting national park resources and recreational values. Cattle Point Road passes through San Juan Island National Historical Park, a unit of the National Park System containing nationally significant cultural, natural, recreational, and scenic resources. It also provides the only road access to the residential areas of Cape San Juan and Cattle Point Estates and the recreational areas of Cattle Point. The road is also for emergency access to the Point.

In addition, there are recreational uses of Cattle Point east of the National Park. Loss of access between Cattle Point and the remainder of the Island would result in hardship to the approximately 270 residents and the restriction of recreational use of Cattle Point. This project will ensure that the continued erosion of the bluff will not impact access to Cattle Point.

Ten preliminary alternative alignments were explored to provide long term continued road access to Cattle Point. These preliminary alternatives examined various routes north of the existing roadway. One option examined reconstructing the road in the existing right-of-way. Four of the alternatives are a realignment of the roadway over a relatively short distance and construction of a retaining wall to stabilize the slope supporting the road. Three of the options at various locations cross over the top of Mount Finlayson. One roadway option, subsequently discarded, used the existing trail/fire road alignment adjacent to Jakle's Lagoon. A second option that was subsequently discarded looked at armoring the beach at the toe of the slope to prevent further erosion. A No Action alternative will also be evaluated as part of the National Environmental Policy Act (NEPA) process.

Alternative alignments suggested during the public scoping process have been incorporated into this final scoping document. The Jakle's Lagoon alternative was dropped from further consideration after public comment during the scoping meeting and other written comments. An additional alternative, armoring the beach at the toe of the slope, also was evaluated and discarded.

Responsible Agencies.

The existing road is currently within a County right-of-way. It is the responsibility of San Juan County Public Works to maintain the road and access to Cattle Point. The County will need to satisfy the State Environmental Policy Act (SEPA) and is acting as the co-lead agency for this project. Tom Huse, Public Works Director, is the contact person at (360) 370-0516.

Since the impacted area is within the San Juan Island National Historical Park, a federal agency, any action that is proposed outside of the existing right-of-way (i.e. granting of an easement by the National Park Service to San Juan County) requires compliance with the National Environmental Policy Act (NEPA). The National Park Service will act as the lead federal agency. The contact person for the National Park Service is Superintendent Cicely Muldoon at (360) 378-2240.

Chapter 2: The Scoping Process

Scoping allows the public and government agencies to identify the range of issues and alternatives to be addressed in the EIS, as well as the potential significant issues related to the proposed action. In accordance with the National Environmental Policy

Act (NEPA), and the State Environmental Policy Act (SEPA), San Juan County and San Juan Island National Historical Park initiated scoping early in the planning stage of the project. Preliminary alternatives were developed by San Juan County Public Works Department and their consultants to provide a starting point for discussions with the public and other affected entities and other alternatives were put forward through the public involvement process.

What are the objectives of the scoping document?

The objectives of the scoping document are to:

- Invite participation of federal, tribal, state, and local governments and other interested persons to identify significant environmental, social, and economic issues related to the proposed action;
- Determine the depth of analysis and significance of issues to be addressed in the Draft Environmental Impact Statement (DEIS);
- Identify how the project will, or will not, contribute to cumulative effects in the Cattle Point area;
- Identify a range of reasonable alternatives that should be evaluated;
- Eliminate from detailed study the issues and resources that do not require detailed analysis during review of the project; and
- Solicit additional study requests to develop appropriate resource information for analysis in the DEIS.

Resource and other issues raised during scoping will be fully explored in the DEIS.

The initial scoping document has been revised, to reflect comments received during the scoping meeting and comment period and to reflect more detailed engineering analysis. This Final Scoping Document is the second in a series of information pieces to update the public on the proposed project. The DEIS will further address comments and input received during the scoping process.

When and where was the scoping meeting held?

In addition to written comments solicited by the initial scoping document, a scoping meeting was held to solicit any verbal comments from agencies and/or the public concerning the project. The public was invited to this meeting to assist in identifying the scope of issues that should be analyzed in the DEIS. The meeting was held Wednesday, August 29, 2001, at 7:00 to 9:30 p.m. in the Mullis Senior Center in Friday Harbor. An Open House preceded the public meeting.

All statements (verbal and written) became part of the public record for the project. Interested parties who chose not to speak or who were unable to attend the scoping meeting were asked to provide written comments and information as described in Chapter 3 of this scoping document.

Public Involvement

The public has had several opportunities during the scoping process to raise their concerns, suggest additional alternatives to be considered and inform the agencies of resources that are available that may assist the agencies with the evaluation of the alternatives that will be analyzed during the preparation of the environmental impact statement (EIS) for Cattle Point Road. Among these were pre-scoping interviews held during July and August of 2001 with members of the community and representatives of organizations having an interest in the Cattle Point Road project. These interviews assisted the project team in understanding many of the public's concerns and being better able to prepare for the Public Scoping Meeting.

In late July, information packets were mailed to more than 175 persons, inviting them to the Public Scoping Meeting held on August 29th, 2001 at the Mullis Senior Center in Friday Harbor, Washington. These packets contained a letter of invitation briefly describing the project, a map of the project area, a set of frequently asked questions and a public comment form to assist people in providing their comments during the scoping phase of the project.

A Preliminary Scoping Document was also available to the public 30 days prior to the Public Scoping Meeting. This document contained more detailed information about the project, and maps and descriptions of the alternatives, which had been identified to date.

The Public Scoping Meeting attracted more than 70 participants, making it one of the best-attended public meetings ever held on San Juan Island. Many of the people attending the scoping meeting also chose to attend the Open House, which preceded the meeting. During this meeting, participants had an opportunity to ask questions of San Juan County and National Park Service staff as well as the project team. They participated in a dialogue around specific questions pertaining to their concerns and the consideration of alternatives that had not yet been identified. In addition, they provided staff and the project team with ideas for some additional resources to assist with analyzing the Cattle Point Road project.

At the end of the public scoping comment period (extended from September 8th to September 20th) 31 written comments had been received by San Juan County Public Works. These comments were then carefully reviewed and integrated, as appropriate, into this Final Scoping Document. Several themes were contained in the public's comments as is noted in the Summary of Comments below.

The scoping comments are on file at the San Juan County Public Works Department and are available for review. Additional information will be provided periodically through newsletters to interested parties.

PUBLIC SCOPING COMMENTS SUMMARY

1. Alternatives

Go over top of Mt. Finlayson.
Opposed to going near tree line on top of Mt. Finlayson.
Develop alternative, innovative solutions to the problem.
Consider alternative between 1 and 2 (wall with some movement north).
Consider alternative between 2 and 3 (Alternative 2.5).
Consider alternative between 2 and the crest of the mountain.
Consider effects of armoring beach, sediment movement.
Consider effects of sheet pile up the bank.
Address vegetating slope.
Develop costs for each alternative.
Evaluate new alternative ("A").
Evaluate moving road only slightly until erosion rate can be determined.
Develop alternative that will last longer than 20-30 years.
Look at tunnel options.

No Action
Unacceptable.
Would threaten resident population.

Alternative 1 (Renumbered in this document as Alternatives 2 and 3)
Interferes with shoreline process and erosion.
Look at combination of Alt 1 and 2.
Would endanger South Beach by inhibiting erosion and could increase erosion elsewhere.
Shore up the existing road.

Alternative 2 (Renumbered in this document as Alternatives 4 and 5)
May be acceptable.
A minor revision of Alternative 2 with end points in common with Alt 2 but with a straight route that climbs to a high point about 30 ft below the crest of the hill, with grades no greater than existing roads.
Provides immediate solution with the fewest negative environmental impacts; allows time for exploration of longer term solution.
Makes the most sense.
Doubt this alternative would last.
Less visual impact.

Alternative 3 (Renumbered in this document as Alternatives 6 and 7)
Unacceptable due to impacts to eagles and people.
Strongly oppose; could impact aquifer, wildlife, hiking.
Should consider because long term cost probably lowest.
Road noise would impact hikers.
Could impact aquifer.

Alternative 4 (Renumbered as Alternative 8)
Unacceptable due to impacts to eagles and people.

Too close to woods, could impact wildlife.
Should consider because long term cost probably lowest.
Strongly oppose; could impact aquifer, wildlife, and hiking.
Doesn't offer any more than Alt 3.
Road noise would be issue for hikers.
Would wipe out hiking trail.
Would have high impacts on wildlife.
Could impact aquifer.
Would result in loss of habitat.

Alternative 5 (Renumbered in this document as Alternative 10)
Eliminate, unacceptable, vehemently or strenuously opposed.
Minimize impacts to forested portion of the peninsula.
Address increased noise and traffic impacts.
Would require logging, loss of habitat.
Strongly oppose.
Strongly oppose could impact aquifer, wildlife, and hiking
Would wipe out hiking trail.
Would have high impacts on wildlife.
Could impact aquifer.

Alternative Access Methods need to be discussed (ferry, bridge). Ferry dock at Fish Creek would impact wetlands.

2. Social and Economic Issues

Emphasize aesthetic impacts.
Trail use will be impacted.
Road would destroy aesthetics, park. New road would devalue the park for the users.
Need to avoid disruption of emergency services; need emergency services plan ; need to construct emergency access ASAP, gravel only with gates until new road completed, then this road could convert to previous state.
Need access to Cattle Point and Cape San Juan; road provides access to food, medical care, jobs and schools.
County has legal obligation to provide access.
Water District requires access for operator.
Without road, property values and other economic issues would be severely impacted.
Damage to recreational and aesthetic resources.
Replacing the existing road at a relocated location will not change the environmental impact of having a road.
Existing road provides access to the Park and the DNR land and residences.
Road is access to sightseeing, recreation and residential activities.

3. Design

Minimize construction activity impacts.
Road cut and fill should be graded and seeded; no masonry or concrete walls.
Find a viable 20-30 year solution; find long-term solution.
Build a road of minimum width so that transit and service vehicles can have access.
Consider floating breakwater to protect shoreline.
Use tetrapods on the beach to reduce erosion.
Try sheet pilings.
Rip rap or groin in appropriate location.
Examine low sheet pile wall (10-12 feet) faced by rip rap along upper shoreline.
When road is moved, can existing road become horse trail, bike trail, etc.

4. New Information

Use aerial photos to determine rate of erosion; examine tidal current, height, wind data and model to determine erosion rates.
Contact Richard Franck (former land owner, living in Bellevue).
Tony Surtha (?), Charlie Nash (Eagles).
Get better data on erosion and erosion rates. Include new study by CGS (using old aerials).
Need better estimates on rate of erosion, the amount of upland erosion vs. marine erosion.
Cause of the erosion is human activity on the slopes; add signage.

5. Environmental

Lady Slippers (orchid) will be lost near Jakle's lagoon.
Nuttall's quillwort may be in project vicinity (Washington Sensitive Species).
Trees on top provide habitat for resident and migratory bird species including: bald and golden eagles, osprey, hawks, harriers, pileated woodpeckers, marbled murrelets and migratory songbirds.
Fish species and eelgrass can be impacted by runoff.
Need full wildlife assessment and how each alternative will affect wildlife.
With each alternative, evaluate runoff into the lagoons and nearshore.
Look at edge effect from road construction.
Full archaeological assessment.
Aquifer and, thus, drinking water supplies could be impacted.
Do plantings on slopes; use matting until established.
Get better estimate of number of residents.
Coordinate with utility companies to determine costs to move.
Reverse osmosis lines near road right-of-way; design needs to protect these lines.
Consider eagle nest sites and perch trees.
Project lies in WDNR Natural Resource Conservation Area; must consider goals, sensitive species, mitigation, and scenic impacts/mitigation.
Restore roadbed.
Comment related to purpose of Park authorization.

CHAPTER 3: REQUEST FOR INFORMATION

Federal, tribal, state, and local agencies and individuals were requested to forward information that they believed would assist San Juan County in conducting an accurate and thorough analysis of the site-specific as well as the cumulative effects of implementing the Cattle Point Road Project. Types of information requested included, but were not limited to the following:

- Identification of, and information from, any other environmental document or similar study (previous, on-going, or planned) relevant to the proposed Cattle Point Road Project;
- Information that would help characterize existing environments and habitats;
- Identification of any federal, state, or local resource plans, environmental impact statements, and future project proposals in the affected resource area;
- Documentation that would support a conclusion that the proposed project contributes to beneficial or adverse effects on resources, including, but not limited to: (a) how the project interacts with other development activities within the affected area, (b) results from studies, (c) resource management policies, and (d) reports from federal, state, and local agencies;
- Existing information and any quantified data that would help to describe the past and present actions and effects of the project and other developmental activities on environmental, social, and economic resources; and
- Information, quantified data, or professional opinions that may contribute to defining the geographical and temporal scope of the cumulative effects analysis and identifying significant environmental issues to be addressed by the cumulative effects analysis.

The requested information was submitted at the scoping meeting or submitted in writing by September 20, 2001. This included any relevant copies of data, reports, or other documentation supporting positions taken. Written submissions were sent to Tom Huse, Director, San Juan County Public Works Department.

CHAPTER 4: ALTERNATIVES

Preliminary Assumptions

Through the scoping process a number of alternate route locations were identified for engineering analysis. To provide a meaningful analysis, certain preliminary design parameters were assumed. The assumptions were based on the premise that the existing road would be replaced with a road with similar design parameters. These parameters were used for preliminary engineering purposes and will be refined as specific alternatives are selected for further analysis. The purpose of these assumptions was to allow for a preliminary comparison of the alternatives. As this screening process proceeds, these assumptions will be revisited. However, for the purposes of preliminary evaluation, the following parameters were used.

| | |
|------------------------|--|
| · Road Classification: | Rural Access (09) |
| · Design Speed: | 50 MPH Desired; 40 MPH Minimum Vertical Curves (Stopping Sight Distance) Horizontal Curves (6% Maximum Superelevation) |
| · Roadway Width: | 24 Feet Wide (Widen 3 feet for guardrail) |
| · Fill Slopes: | 3 to 1 (2 to 1 Behind Guardrail) |
| · Cut Slopes: | 2 to 1 Maximum for Permanent Slopes for Reseeding ¾ to 1 Maximum Temporary Construction Slope |
| · Retaining Wall: | 18 Feet Minimum from center line of road to face of wall (12-foot lane with 6-foot shoulder) 35 Feet Maximum Economic Height |
| · Tunnel: | 36 Feet Minimum Width (2-12 foot lanes and 2-6 foot shoulders (Face of Wall to Face of Wall) 16.5 Feet Minimum height in tunnel |
| · Drainage: | Assumed sheet flow off road and infiltration |

These parameters and the alignments studied are conceptual only, focus on engineering issues, and will be refined as in depth analysis is completed for the DEIS. Detailed environmental analysis of each alternative will be completed in the DEIS process. When a preferred alternative is identified, a final design will need to be prepared that may require modifications to both the horizontal and vertical alignments shown in this scoping document. In the DEIS, both agency preferred and environmentally preferred alternatives will be addressed.

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Alternatives Brought Forth for Further Consideration ([Figure 2](#))

ALTERNATIVE 1

This alternative is the No Action Alternative. Under this alternative, the County would continue to maintain the road in its current alignment for as long as feasible. It is anticipated that Cattle Point Road will eventually fail and vehicular access to the southern terminus of San Juan Island would be cut off. Information to be analyzed in

this alternative would include the effect on residents and visitors, effect on resources, and an exploration of alternative modes of access.

ALTERNATIVES 2 and 3: Existing Alignment Moved into the Hillside

Alternative 2 follows the existing alignment with the centerline being re-located 20 feet toward the hillside (a distance of 0.31 miles and 40 feet toward the hillside in Alternative 3 (a distance of 0.32 miles). Under both Alternative 2 and 3, the existing centerline is lowered approximately 5 feet at the highest point and the cut slopes are retained using concrete retaining walls. The maximum height of the retaining wall for Alternative 2 is 26 feet (20 feet effective height) and Alternative 3 is 33 feet (27 feet effective height). The construction limits with a $\frac{3}{4}:1$ slope and the area that would be disturbed if a typical road section were used are shown on the drawings for illustrative purposes ([Figures 3](#) and [4](#)).

The earthwork quantities on Alternative 2 would balance i.e., excavated material would be utilized for embankments and backfill behind the retaining wall. Approximately 11,000 cubic yards of excavated material would need to be wasted off-site on Alternative 3.

Although additional protection from the eroding slope could be achieved using higher retaining walls and moving the roadway farther to the north, the costs quickly become prohibitive when compared to the benefits obtained. Also, the use of "MSE" or Reinforced Earth Walls was investigated but the American Association State Highway and Transportation Officials (AASHTO) requirements for embedment of the anchorage (70% of the wall height) make reinforced concrete walls the cheapest alternative for retaining a cut slope. Other types of retaining walls will be considered as a part of the analysis.

Both alternatives would meet a 50 mph design speed within the improved section although the appropriate speed will be analyzed further. Due to the limited width available, construction while open to traffic would be difficult and may require periodic closures.

ALTERNATIVES 4 and 5: Alignment along the Side of Mt. Finlayson

The alignment for Alternative 4 is located approximately 140 feet horizontally and 40 feet vertically from the centerline of the existing road in the area of the worst potential failure for a distance of 0.57 miles. Except for the alignment of Alternatives 2 and 3, this route would be the least visible from the trail located on the ridge above. The natural ground contours (roll) should hide the roadway except for the beginning and end of the section ([Figures 5](#) and [6](#)).

Two (2) variations of this alignment were evaluated; (1) Alternative 4 would be constructed using a typical roadway section with an open roadside ditch for drainage and (2) Alternative 5 would be constructed using a retaining wall to reduce the extent of

the cut slope. Alternative 4, using the typical roadway section, would meet a 50 mph design speed within the improvement area and the earthwork quantities would balance. Alternative 5, utilizing a retaining wall, would meet a 50 mph design speed but, as presented, the earthwork quantities would not balance. Alternative 5 will require a borrow source for approximately 58,000 cubic yards to construct the embankments. It is assumed the shortage of material can be overcome during final design by reducing the amount of fill on both ends of the section and lowering the high point with a corresponding increase in the height of the retaining wall.

ALTERNATIVES 6 and 7: Alignment Across Top of Mt. Finlayson

Alternative 6 leaves the existing roadway approximately 0.6 miles west of the erosion area and follows an alignment up the slope, through the front face of the high point and back down to meet the existing roadway, a distance of 1.10 miles. Two (2) alternatives in this alignment were studied. Alternative 6 uses a typical road section throughout the length of the section. Alternative 7 uses an underground structure (tunnel) constructed by excavating the area, building the structure, and backfilling to the existing ground contours ([Figures 7-1](#) ; [7-2](#); [7-3](#), [8-1](#); [8-2](#); [8-3](#); [8-4](#)).

Both Alternative 6 and 7 require a significant amount of earthwork. Alternative 6, using a typical roadway section, will generate approximately 110,000 cubic yards of excess material that must be disposed of off-site. In Alternative 7, using the underground structure, the excess material would be utilized to bury the structure. Both alternatives will meet a 50 mph design speed.

ALTERNATIVE 8: Alignment on Top of Mt. Finlayson near the Tree Line

Alternative 8 is the longest section studied, a distance of 1.35 miles. This alternative rises from the west to the east and follows along but below the ridgeline before proceeding through the high point and down to a connection with the existing roadway. This would meet a 40 mph design speed only and the earthwork quantities would not balance. The fill slopes from Sta 27+00 to Sta 54+00 ([Figures 9-1](#); [9-2](#); [9-3](#)) on the right were flattened to 2% to reduce the amount of waste but it is still estimated approximately 44,000 cubic yards would have to be wasted off-site. No tunnel option was evaluated since the tunnel would be located in both a horizontal and vertical curve.

ALTERNATIVE 9: Reconstruct the Road in the Existing Right-of-Way

Alternative 9 addresses both the need for a concept that could be used to temporarily protect the road should shoreline erosion encroach on the existing alignment and the need to explore an alternative that would maintain the existing road alignment. This alternative disturbs the least amount of land and involves the least impact to the national park resources and the existing public use of the area. Approximately 800 lineal feet of soil-nailed retaining wall would be installed north of the existing road alignment within the County road right-of-way. The road would be lowered approximately 17 feet ([Figure 10-1](#)). It is possible that the final design of this system could involve more

complicated elements, but that determination will be based on geotechnical and cost analysis of the alternative. Equipment and material staging areas would be restricted to within the existing County right-of-way. Construction equipment would be positioned on or immediately adjacent to the existing right-of-way to drill in grouted rods on the south side of the existing road above the eroded bank. Minor roadway construction would be required to repair any damage caused by installation of the rods and a new guardrail would be installed between the edge of the roadway and the new slope cut. The rod and nail system would be drilled to a depth sufficient to withstand the soil and traffic loads. Alternatively, a system of tiebacks would be used to ensure stability of the rods. The lifespan of this solution is highly dependent on the depth to which the rods are driven and/or the extent to which secondary systems are used to support or tieback the piling. Erosion of the shoreline will eventually expose the outside of the rods and may require covering the face of the rods to prevent erosion from behind. Eventually the erosion of the shoreline may progress far enough to cause the piling to fail ([Figure 10-2](#)) but tieback systems could be used to combat this possibility. Further detailed engineering design will be required. Better information regarding the rate of shoreline retreat needs to be developed for the DEIS to adequately analyze this alternative.

Alternatives Considered But No Longer Being Analyzed

ALTERNATIVE 10: Alignment near Jakle's Lagoon

Alternative 10 would construct approximately 8700 lineal feet of road. The proposed alignment would follow the existing Jakle's Lagoon trail through the trees on the north side of Mount Finlayson. The vertical alignment uses 8% grades to minimize the amount of cut and fill required to follow this alignment even though the use of 8% grades is not normally recommended for public roadways. The west end of the alignment includes several approximately 20 foot deep cuts to accommodate abrupt changes in the existing topography. The alignment requires several tight radius curves to avoid significant departures from the alignment of the existing trail. In addition, the alignment passes through several areas where the cross slope of the existing ground is in excess of 30%. These areas would likely require special treatment including the use of retaining walls, crib walls, or other methods to stabilize these slopes after the roadway has been constructed. The alignment terminates at a trailhead and public use area on Cattle Point. Construction of the roadway would require removal of vegetation throughout the proposed route, including trees, shrubs, and ground cover. It would cause unacceptable adverse impacts to national park natural, cultural, recreational, and scenic resources. After receiving input from the public during the scoping process, this alternative has been dropped from further consideration. The lead agencies concur with the public that the damage caused by this alignment to park natural, cultural and recreational resources is prohibitive.

ALTERNATIVE 11: Armor the Toe of the Slope To Eliminate Erosion

This alternative was suggested during the scoping process. The beach at the toe of the slope would be armored with large riprap or sheet piling for a distance of 1,750 feet. The purpose of the armoring would be to halt the erosion of the toe of the slope thereby

precluding the need to relocate the road.

Two methods of construction could be used. Either rip rap or sheet piling would be imported by barge and placed on (or in) the beach using a barge mounted crane or pile driver or an access road could be constructed from Cattle Point Road or Picketts Lane to the beach and riprap could be dumped and placed by a tracked excavator or sheet pile could be driven by a track mounted pile driver.

In all of the scenarios, there would be significant adverse impacts to the beach during construction. Further, studies have shown that armoring beaches in this manner simply moves the erosion to locations at the end of the armoring. In this case, armoring would simply "move" the beach and bluff erosion farther to the west.

Chapter 5: Scope of Environmental Analysis

To ensure compliance with environmental planning under the National Environmental Policy Act (NEPA), an analysis of the following environmental elements will be completed for each alternative carried forth for further consideration. Appropriate specialists with relevant expertise in each field of study will evaluate each resource element. Each analysis will include an assessment of the existing conditions, an assessment of the project impacts (including a comparison of alternatives), and an assessment of appropriate and feasible mitigation measures. Impacts to the park's natural, cultural, recreational, and scenic resources will be evaluated according to National Park Service (NPS) policy, and related environmental law.

New Road Requirements

Each alternative that contemplates a new road alignment will be evaluated against the following criteria for any new road proposed through a unit of the National Park System:

There is no feasible and prudent alternative;
All possible planning has taken place to minimize and mitigate harm to the park;
It will not be contrary to the public interest, or inconsistent with the purpose for which the park was established;
It will not cause health and safety risks to (residents), visitors or park staff; and
It will conform to NPS standards and practices for road design, engineering, and construction.

Soils, Geology, and Topography

Initial work involved collection and review of readily available geotechnical and geologic information for the project corridor, including published sensitive areas, geologic and topographic maps; previous consultant reports; and soil survey maps. The Washington State Department of Transportation (WSDOT), the County road and public works

departments were queried to determine if they had additional archived information for nearby projects.

A detailed site reconnaissance of the preliminary alternative routes was completed to further evaluate the possible geotechnical and geologic impacts of each alternative route for the proposed project. The reconnaissance provided information on surface conditions, geologic hazards, and likely subsurface conditions, from which a more detailed geotechnical evaluation of the project was made.

Borings adjacent to the existing roadway were completed to an elevation below sea level. Aerial photographs from 1960, 1970, 1980, and 2001 were obtained to determine the rate of erosion along the bluff adjacent to the road.

A number of comments were received that related to the necessity of determining the rate of retreat (erosion) of the bluff, possible solutions at the toe of the bluff, and revegetation of the slope. These elements will be analyzed for inclusion in the DEIS.

The DEIS will include a review and analysis of previous coastal geology studies relevant to the project area, the data collected by the county and Park relating to erosion of the bluff and a review of other information relating to erosion rates. Determining the rate of erosion is important in determining the life span of each alternative.

Air Quality

An air quality analysis will be completed using the guidelines contained in WSDOT's Environmental Procedures Manual. Project impacts included in the DEIS will be evaluated by considering: dust and particulates, wind erosion, slash disposal, burning, odors, emissions from construction equipment, and permit requirements.

Cultural Resources

The NPS has initiated consultation with potentially affected tribes, the State Historic Preservation Office, and the Advisory Council on Historic Preservation regarding this project. The NPS has also completed a preliminary archaeological survey of the project area. During the DEIS data gathering process, a contractor will complete detailed archeological analysis for each alternative. Coordination will be maintained between San Juan County, appropriate tribes, the NPS and with the State Historic Preservation Office (SHPO).

The DEIS will provide a review of the findings of the studies, the potential impacts to cultural resources that may occur under each alternative and a discussion of mitigation that may be required to avoid or minimize impact to these resources.

Land Use

Land use information collected and analyzed will include the following: regional setting, land use, and ownership patterns, location and access, specific amounts and types of land in the project vicinity, existing zoning and possible conflicts between the proposed alternative actions and existing land uses.

The DEIS will address those elements in National Park regulations that relate to land uses. It will also address the Washington Department of Natural Resources management plan requirements for the lands east of the national park.

Waterways and Hydrologic Systems and Wetlands

Information collected on waterways and hydrologic systems would include identifying and characterizing existing project area drainage systems (streams, ditches, culverts, ponds, and wetlands). The focus of the hydrologic analysis in the DEIS will be to identify potential adverse impacts that may result from significant modification of existing drainage systems or patterns of runoff. In locations where data are lacking, qualitative judgments will be made to allow for alternative comparisons.

Some comments were received that related to surface runoff from some of the alternatives (4 and 5). The DEIS will address how that runoff might impact Jakle's Lagoon, how modifications to the surface runoff patterns might be impacted by the various road configurations.

Concern was also expressed as it relates to the aquifer underlying Mt. Finlayson. The aquifer is a source of drinking water on Cattle Point. The DEIS will address how this aquifer might be impacted.

Vegetation, Wildlife, and Fisheries

Vegetation types that occur within the project area have been mapped by a qualified specialist contract by the County. The evaluation of habitat types includes a review of available existing information concerning native plant communities, and the occurrence of rare, threatened or endangered plant species. Possible regionally rare plant communities were identified through database queries to the Nature Heritage Program within the Washington Department of Natural Resources and consultation with appropriate state and federal agencies and local experts. On-site fieldwork concentrated on validating existing habitat and species information collected during the initial phase. A map of existing vegetation types will be developed for use in the DEIS.

Wetlands were identified using the U. S. Army Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory, 1987) and the Washington State Wetland Delineation Manual (Washington Department of Ecology, 1997). Wetland inventory maps developed by the NPS and San Juan County were used in the field and validated through field observation. Any additional wetlands identified within the project area will be mapped and described in the DEIS. Descriptions of wetlands potentially affected by the alternatives will be presented in the DEIS. Wetland types will be classified using the

Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979), as well as the Washington Department of Ecology's (WDOE) Wetland Rating System. This information will be included in the DEIS along with a description of the potential impacts to the plant communities and methodologies employed to avoid, minimize and mitigate those impacts.

A qualified specialist contracted by the County also evaluated wildlife species within the project area were also evaluated. For potential impacts for threatened and endangered species, the U. S. Fish and Wildlife Service and the National Marine Fisheries Service were contacted by the County's contractor to obtain data regarding Endangered Species Act listed species. Listed species of concern in the area include bald eagle and marbled murrelet. The NPS has completed the first year of a two-year study to determine if marbled murrelets nest in the project vicinity. The Washington Departments of Fish and Wildlife and Natural Resources were contacted to determine the presence of priority habitats and species and ecologically sensitive habitats. Potential impacts to additional listed species may also need to be evaluated.

The DEIS will contain a summary of the findings of the fieldwork as well as information collected from the resource agencies. Some alternatives have greater potential for impacts to habitat and wildlife. Impacts will be presented and potential mitigation developed for the EIS.

Scenic and Recreational Resources

The effect of each alternative on the aesthetic and recreational values of resources in the project area will be described in the DEIS. The use and historic value of current recreational paths and vistas will be described and evaluated. Impacts to the trails and the scenery as a result of each alternative will be evaluated and potential mitigation described. Impacts to visitor use and experience will be analyzed, including noise, visual intrusion, traffic control/rerouting, visitor inconvenience, and park operations.

Utilities

The existing power, telephone and some of the water lines are located in the existing right-of-way. Utilities within the existing right-of-way will need to be considered during the design of the alternatives. The DEIS will address relocation of these utilities in terms of cost, construction and operational impacts. An analysis of how alternative road cuts might impact the drinking water wells that serve portions of Cattle Point will be included in the DEIS. As part of the alternatives analysis, an evaluation of the loss of these utilities also needs to be evaluated.

Impairment Determination

The NPS will prepare an "impairment" determination following the environmental analysis. By provisions of laws governing the NPS, the NPS is prohibited from taking or authorizing any action that would, or is likely to, impair park resources or values. In

addition, under other environmental laws, adverse impacts may be prohibited as well. Impacts that may constitute an impairment of park resources or values will be evaluated and described in the environmental analysis contained in the DEIS. This determination is prepared by the NPS following the environmental analysis of the alternatives, and will be part of the public record.